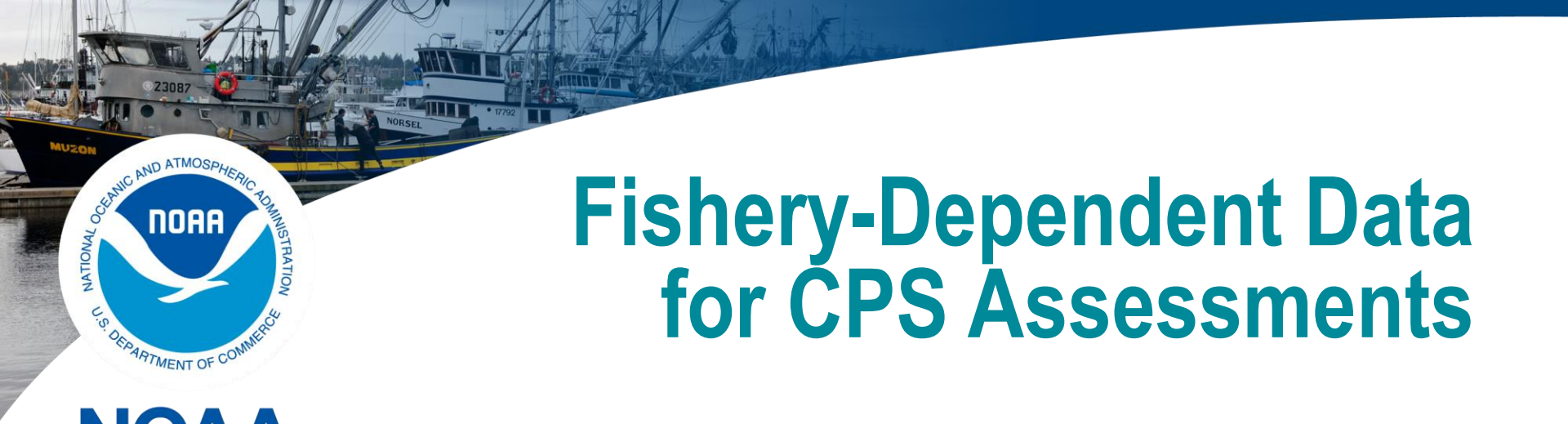


NOAA FISHERIES

SWFSC-FRD

Fishery-Dependent Data for CPS Assessments

Kevin T. Hill

Population Dynamics Group

Presentation 6.0

July 29, 2013

Fishery-Dependent Data Matrix for CPS

				Species	Jack mackerel	Years	Northern Anchovy - Central Subpopulation	Years	Northern anchovy - Northern Subpopulation	Years	Market squid	Years	Pacific mackerel	Years	Pacific sardine	Years
				Las Assmt Year			1995				*2013*		2011		2012	
Current Fishery-Dependent data collection programs	Commercial	Catch	Fishticket	Canada	0	98-13			0	98-13			0	98-13	X	98-13
				Washington	0	81-13			0	81-13	0	81-13	0	81-13	X	81-13
				Oregon	0	81-13			0	81-13	0	81-13	0	81-13	X	81-13
				California	0	69-13	X	69-13			X	69-13	X	69-13	X	69-13
				Mexico	0	80-12	X	80-12			0	80-12	X	80-12	X	80-12
			Logbook	Canada	0	98-13							0	98-13	0	98-13
				Washington											0	00-13
				Oregon	?	?			?	?	?	?	?	?	0	?
				California							0	00-13				
				Mexico	0	??-13	0	??-13			0	??-13	0	??-13	0	??-13
		Life History/Biology	Length	Canada					Z						X	99-13
				Washington					Z						X	00-13
				Oregon					Z						X	99-13
				California	0 (Z)	67-95	X (Z)	66-82			X	81-13	X	62-13	X	78-13
				Mexico			X (Z)	78-89					0	89-??	X	89-09
			Age	Canada					Z						0	99-13
				Washington					Z						X	00-13
				Oregon					Z						X	99-13
				California	0 (Z)	67-95	X (Z)	66-82			X	81-13	X	62-13	X	78-13
				Mexico			X (Z)	78-89					0	89-??	0	89-09
			Reproduction	Canada					Z						0	99-13
				Washington					Z						0	00-13
				Oregon					Z						0	99-13
				California	0 (Z)	67-95	X (Z)	66-82			X	81-13	0	62-13	0	78-13
				Mexico			X (Z)	78-89					0	89-??	0	89-09
	Recreational	RecFIN	Catch, Effort, Length		0	80-03, 04-13							X	80-03, 04-13		
		Logbook	Catch, Effort		0	36-13, 80-13							0	36-13, 80-13		

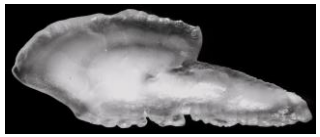
Salient Points

1) CPS fishery data collected and managed by other (non-Federal) agencies
2) Sampling scheme adequate for **primary species** in CPS assemblage of **current fishery**
3) Sampling scheme inadequate and challenging for 'less-harvested' species of the CPS assemblage

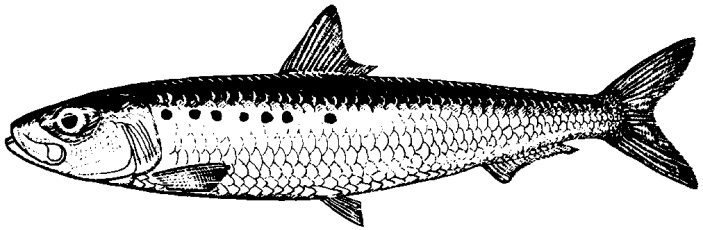
Fishing Areas, Port Sampling, & Data Management

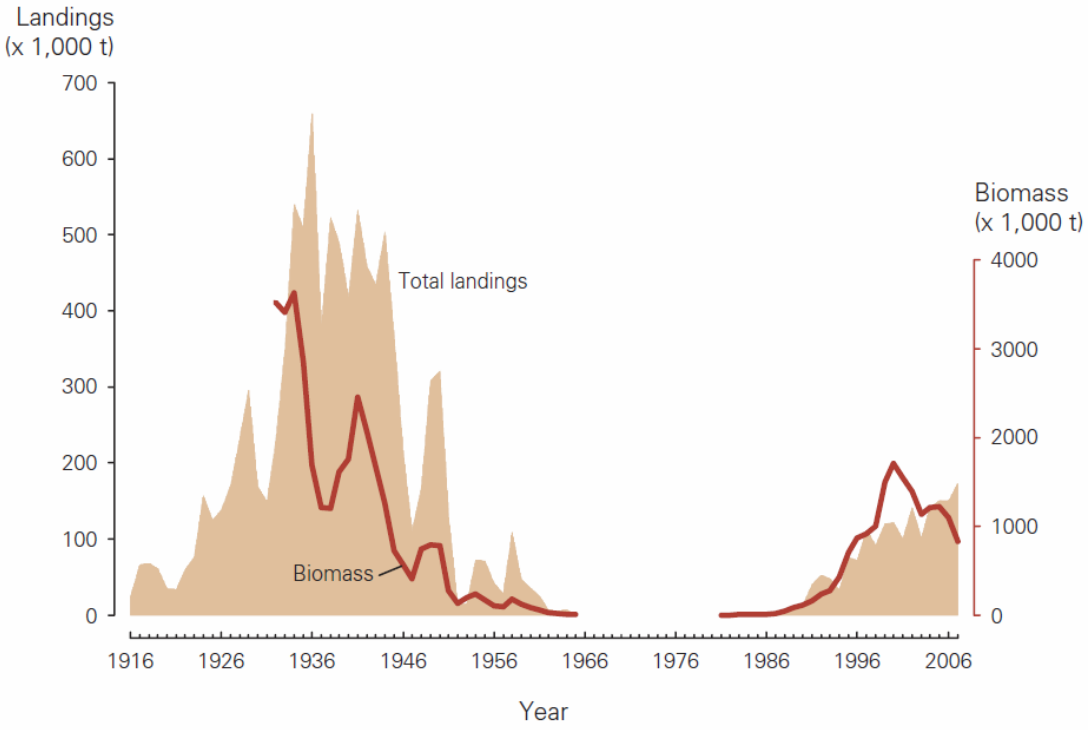
Types of fishery-dependent data collected:

- Landings (commercial and recreational)
- Logbooks (commercial and recreational)
- Biological samples (commercial 'port')
  - Size (length, weight)
  - Age (otoliths)
  - Sex (gender, maturity code)
  - Data types similar among areas
  - Sampling rate and data availability can vary regionally



Pacific Sardine

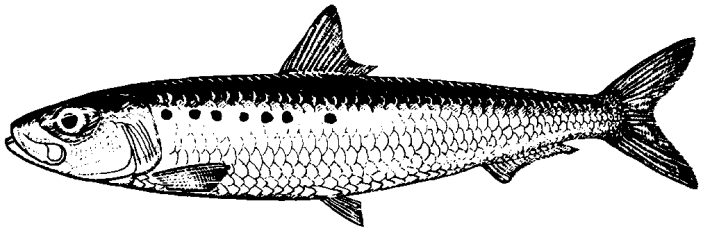


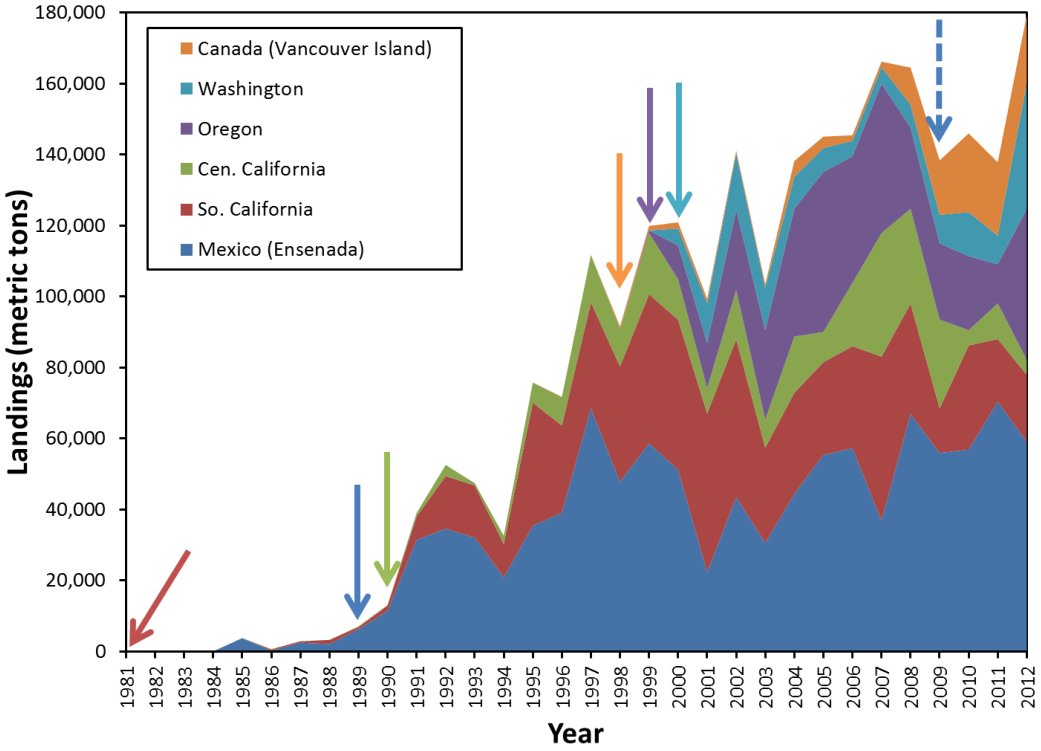


- **Historic period**
  - Peak catch: 718,000 mt (1936)
  - Sample data: 1919-1965
  - Early ‘assessments’ (VPA):
    - Murphy (1966), MacCall (1979)
  - Challenges:
    - Historic databases a work in progress

- **Recent period**
  - Fisheries resumed early 1980s
  - Peak catch: 179,338 (2012)
  - Low volume, high value live bait fishery (not sampled)
  - Sample data
    - Most fisheries sampled from onset
  - Ongoing challenges
    - Stock structure and distribution uncertainty
    - Ageing QA/QC
    - Access to recent Ensenada data
    - Support for survey index of absolute abundance

Pacific Sardine





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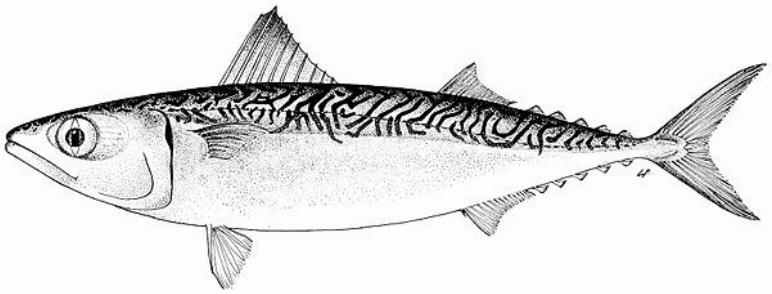
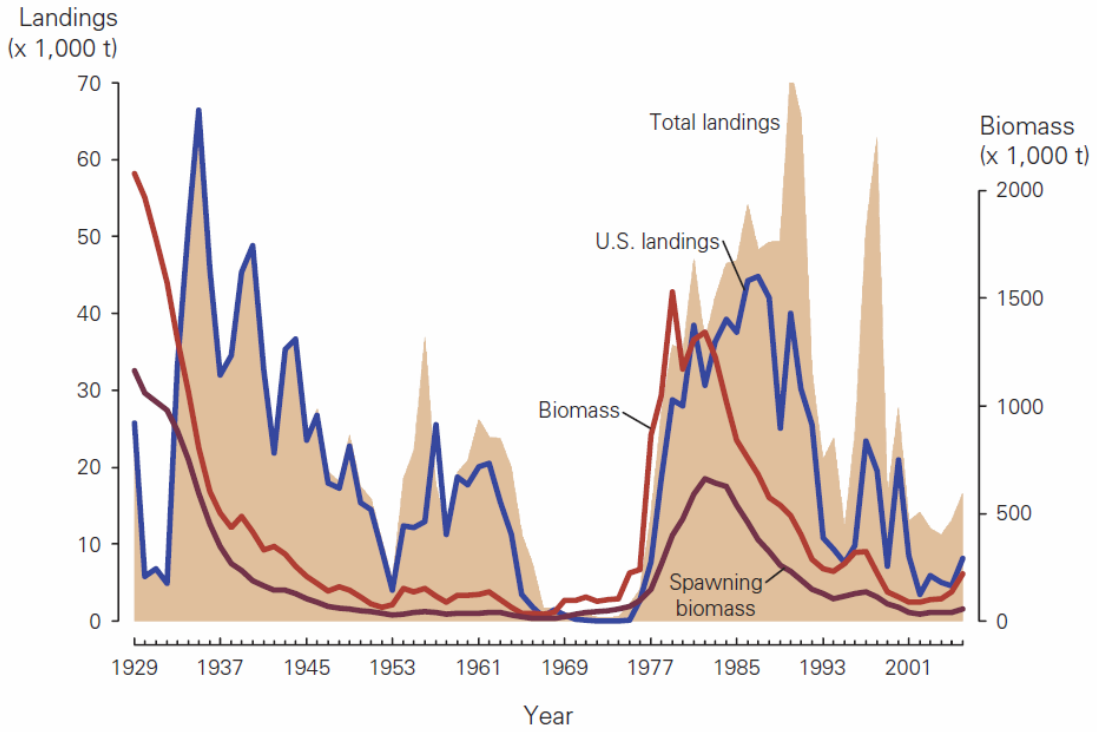
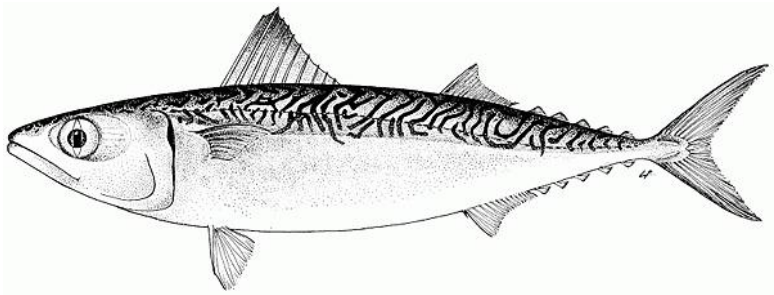
Pacific Mackerel

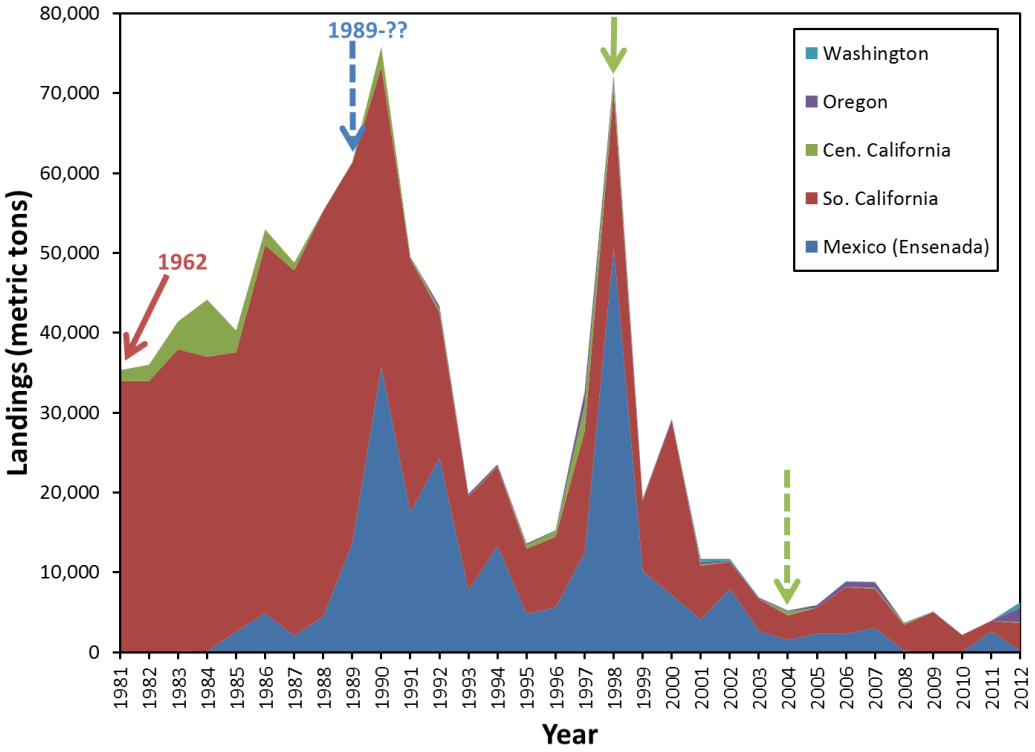




- Historic abundance peaked in 1930s.
- Moratorium mid-60s to late-70s
- Most recent peak abundance from late-70s to early-90s.
- Peak catches: 73,361 mt in 1935; 78,700 mt in 1998
- Historic port sample data: 1929-65
- Port sample database: 1962-present
- Recreational fishery, but non-target species and limited fishing pressure
- Low-volume fishery currently (limited biological samples)
- Most fishing occurs in S. CA and Ensenada
- Ongoing challenges:
  - Same as P. sardine
  - Need Ensenada sample data (1989 onward)
  - Transition from fishery-dependent to fishery-independent data emphasis in assessment used for management

Pacific Mackerel





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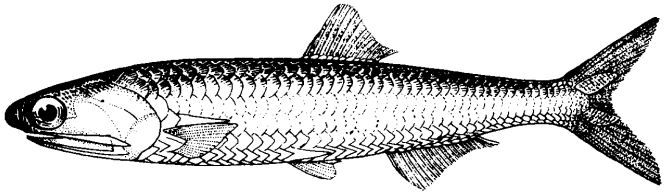
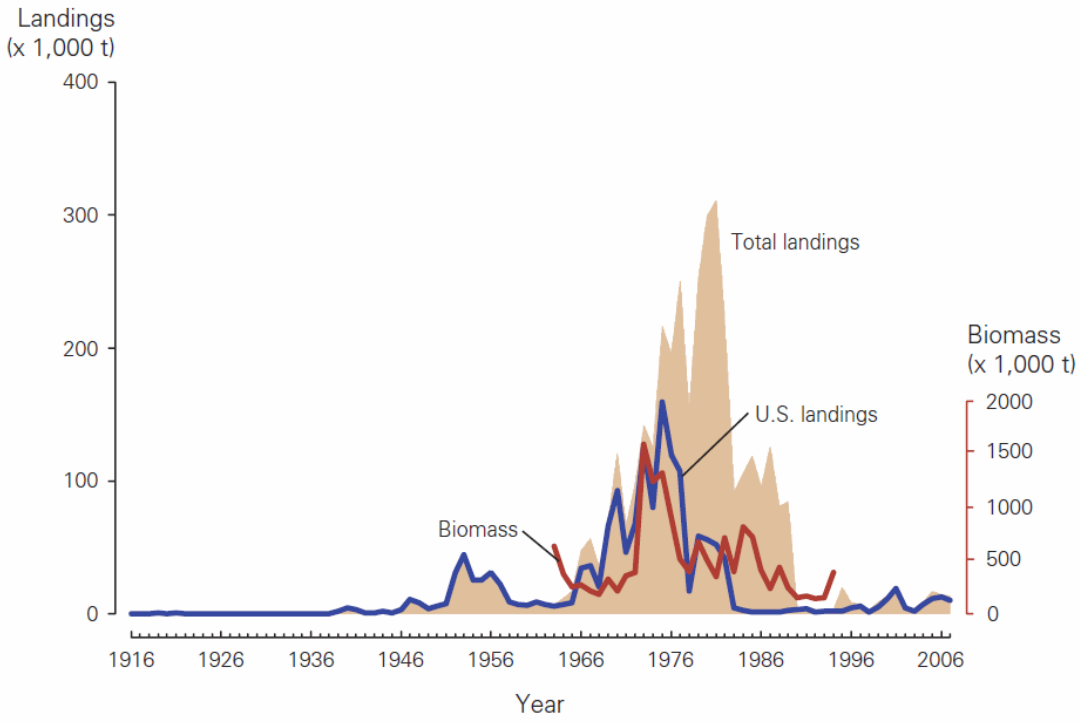
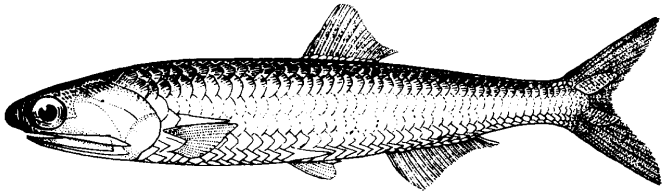
Northern Anchovy Central Subpopulation

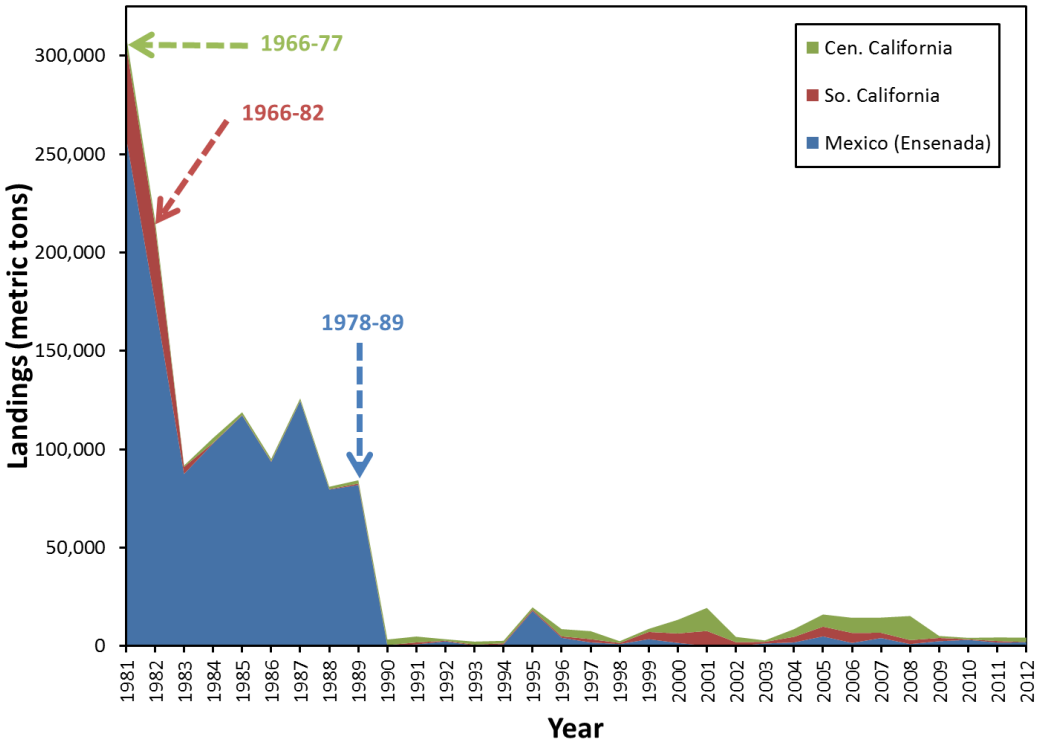




- Coastal distribution (Cen. CA →No. Baja)
- Ensenada peak: 259,000 mt in 1981
- CA peak: 120,300 mt in 1973
- Total peak: 315,000 mt in 1981
- Low-volume, high-value live-bait fishery (not sampled)
- No biological samples since late 1980s
- Low-volume fishery currently
- Low-volume, high-value live bait fishery (not sampled)
- Last assessed in 1995 (Jacobson et al.)
  - Peak biomass ~1.6 mmt in 1973
  - Peak *F* = 0.35 in 1980

Northern Anchovy Central Subpopulation





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Northern Anchovy
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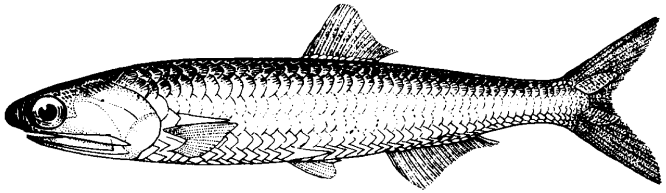
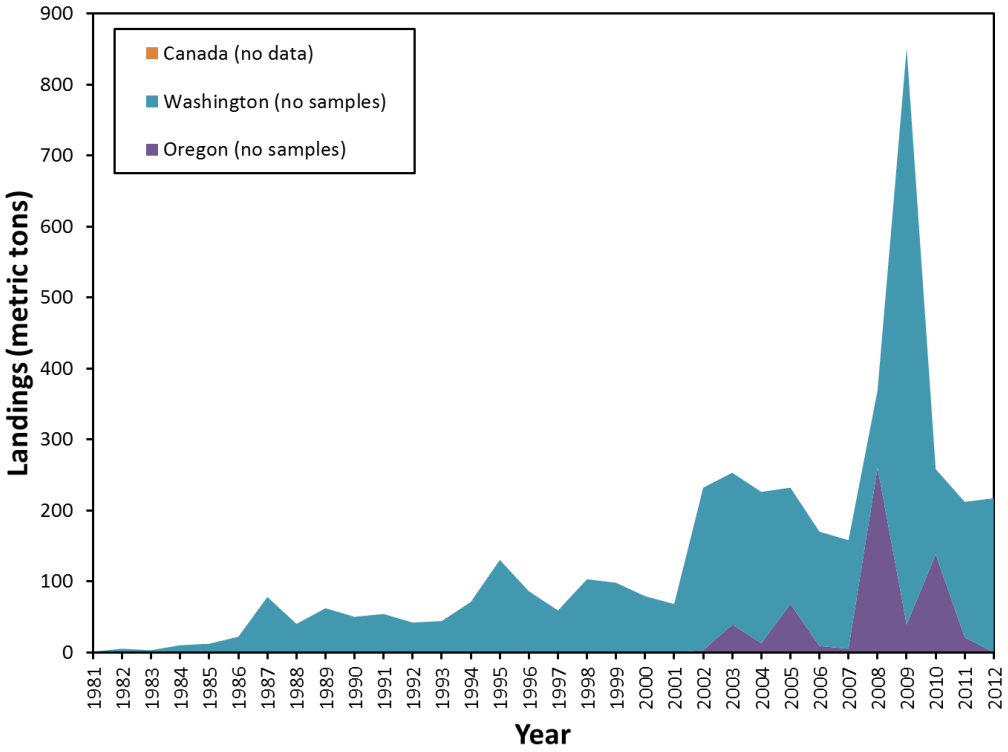
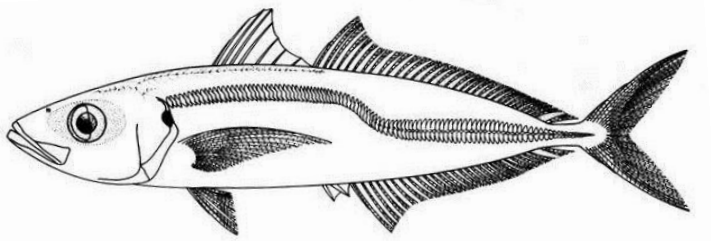
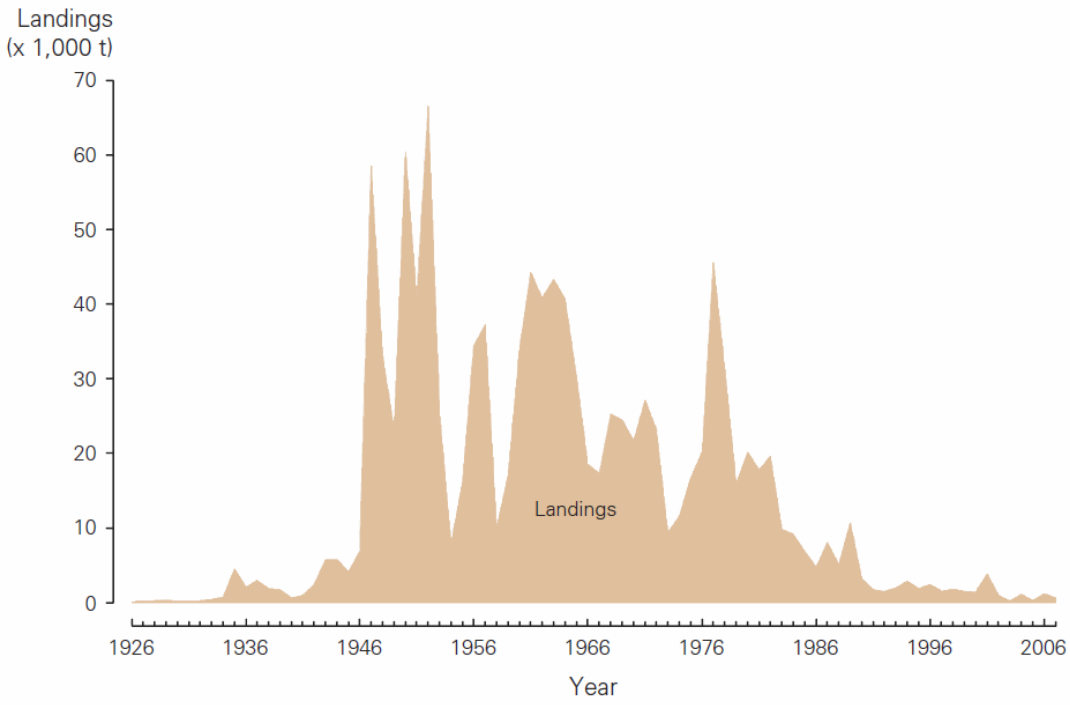




- Coastal distribution, OR→BC
- Low-volume, high-value bait fishery (e.g., albacore)
- Small niche market for specialty food products
- Peak catch 850 mt in 2009, followed by tighter restrictions in Washington
- Low-volume fishery currently
- No port samples
- Never formally assessed

Jack Mackerel





- Broadest distribution of the CPS assemblage
- Majority of catch in So. Cal.; young fish (0-5 yrs.)
- Catches highest: 1947-82
- Peak catch: 66,900 mt in 1952
- Biological sample data: 1967-95
- Small recreational fishery (non-target)
- MacCall & Stauffer (1983) dynamic pool model estimates of biomass and potential yield
- Low-volume fishery currently
- Never formally assessed

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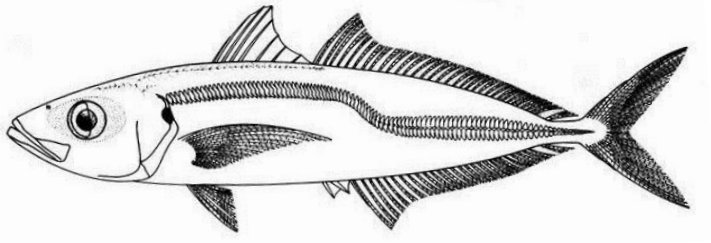

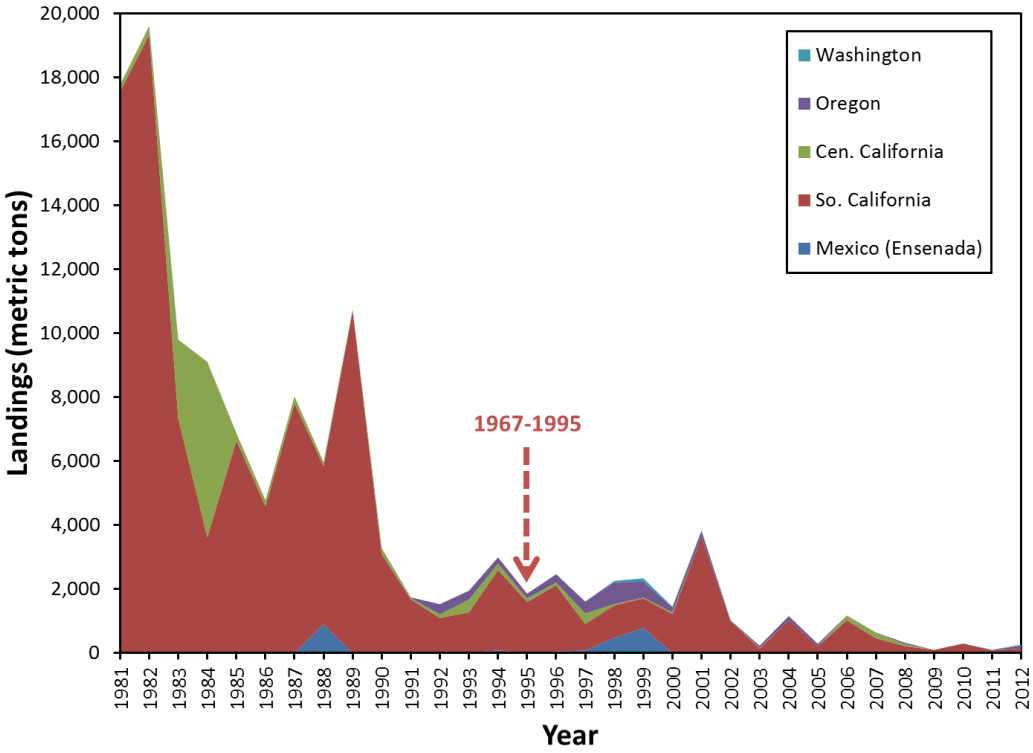

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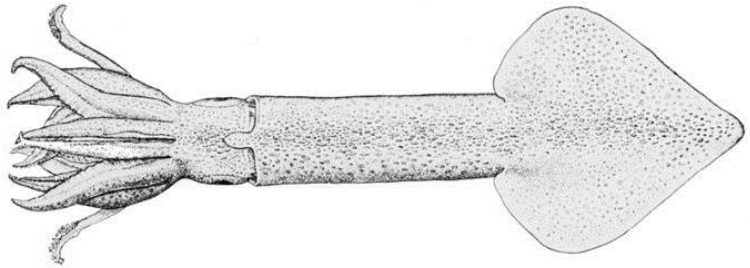
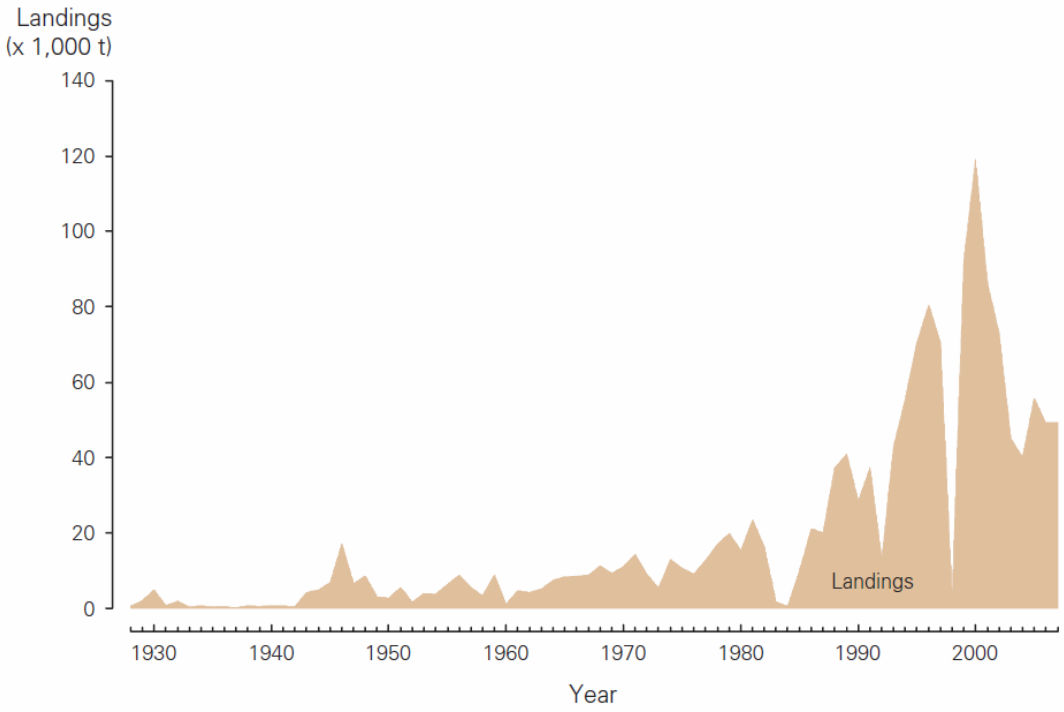
Market Squid





- Fished since late 1800s
- Majority landed in So Cal.
- Purse seiners assisted by light boats
- Peak catch: 130,900 mt in 2010
- Biological samples collected since the 1970s
- Sample data (including gonads for EE): 1999-present
- Ongoing challenges:
  - Considerable backlog of gonad and statolith samples;
  - Long-term vision and plan regarding population dynamics research and fishery monitoring

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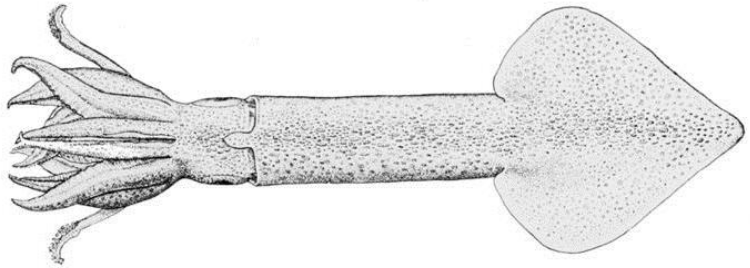

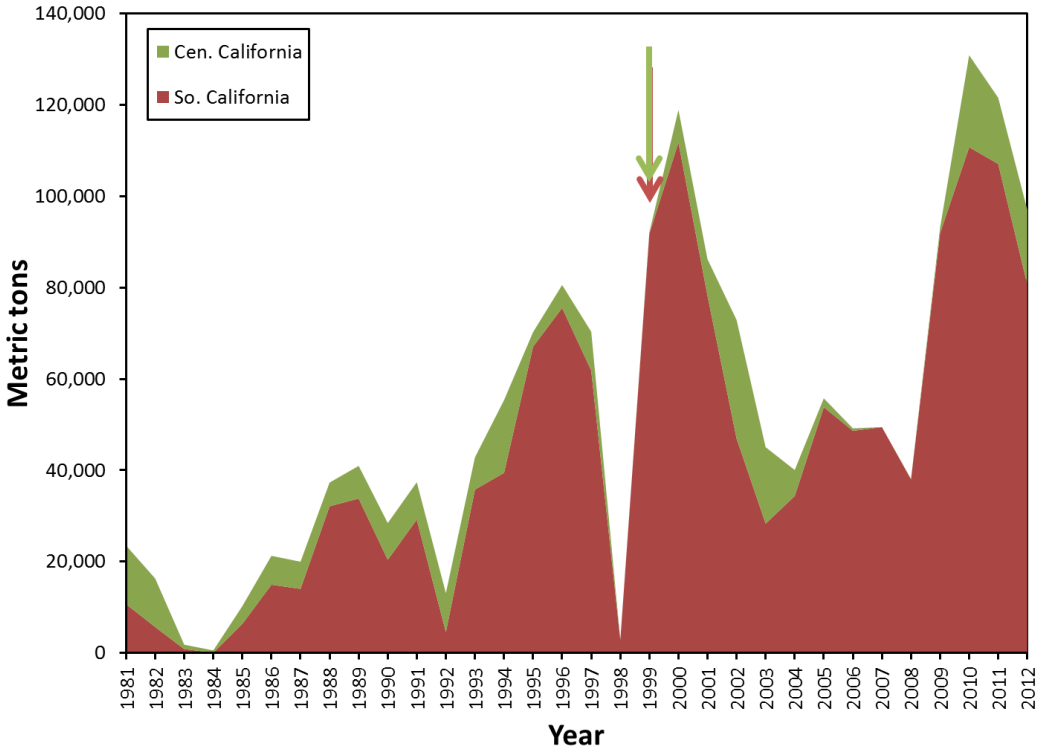

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Strengths, Challenges, and Strategies

Strengths

- Sampling high-volume CPS stocks in current fishery
- Sample data types consistent across states and countries
- Established good working (scientific/technical) relations with states and nations to date
- Some progress in collaboration with Mexico (INAPESCA, CICESE, & CICIMAR)

Challenges

- Timely access to Mexican port sample data (INAPESCA)
- Limited to no sampling for low-volume CPS
- QA/QC of production ageing/database
- Need for broad, ongoing, comprehensive, and adaptive CPS field sampling/laboratory/database framework

Strategies

- Ongoing efforts to collaborate with Mexico (MexUS, Trinational, & Pelagicos Menores workshop)
- One-stop shopping for U.S. data (e.g., state data→PacFIN-BDS)
- Tri-national ageing workshops for CPS with sample exchanges (currently ongoing for sardine)
- Funding for long-term arrangements with states currently sampling federal-managed CPS (e.g., formal sampling programs/projects administered via PSMFC per Groundfish & Salmon)